WHAT IS CLAIMED IS:

1. A method of detecting life of an image bearing member comprising:

a contact time detecting step of detecting contact time when a developer carrying member that can have a contact or a clearance with an image bearing member contacts said image bearing member, said developer carrying member developing an electrostatic image formed in said image bearing member by a developer; and

a determining step of determining life of said image bearing member in accordance with a parameter calculated by using the contact time detected in said contact time detecting step.

2. A method according to claim 1, wherein said detecting method comprises a storing step of storing an integration value obtained by integrating the parameter, and said determining step determines the life of said image bearing member in accordance with the integration value.

3. A method according to claim 2, wherein, in said determining step, the life of said image bearing member is determined by comparing the integration value and life information of said image bearing member in which the integration value is previously determined.

4. A method according to claim 1, wherein said detecting method comprises a voltage applied time detecting step of detecting applied time of a voltage applied to charging means for charging said image

5 bearing member, which is used for forming the electrostatic image in said image bearing member, and the parameter is calculated by using the voltage applied time.

10 5. A method according to claim 4, wherein the voltage applied time comprises n (n ≥ 1) kinds of voltage applied times for n kinds of respective voltage applied conditions applied to said charging means.

15 6. A method according to claim 5, wherein the parameter is calculated based on

$$D = \sum_{i=1}^{n} (ki \times ti) + (kd \times td)$$

using the voltage applied time ti (i = 1 to n) for each of the n kinds of voltage applied conditions i (i = 1 to n), the contact time td, a coefficient ki (i = 1 to n) and kd (incidentally, k1 > 0, ki (i = 2 to n) ≥ 0, kd ≥ 0).

7. A method according to claim 3, wherein it is notified that said image bearing member has reached the

expiry of life when the integration value is equal to or more than the life information.

8. A method according to claim 1, wherein, in said determining step, it is warned that the expiry of life of said image bearing member is near in accordance with the parameter before the determination of the life of said image bearing member.

9. A method according to claim 7, wherein it is warned that the expiry of life of said image bearing member is near when the integration value is equal to or more than warning information and is smaller than the life information in comparison with the warning information in which the integration value is previously determined.

10. An image forming apparatus comprising:
an image bearing member;
a developer carrying member for developing an electrostatic image formed on said image bearing member by a developer, said developer carrying member capable of being in contact with and having a clearance with said image bearing member;
detection means for detecting contact time when said developer carrying member contacts said image bearing member; and

determining means for determining life of said image bearing member in accordance with a parameter calculated by using the contact time detected by said detection means.

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11. An apparatus according to claim 10, wherein said apparatus comprises storage means for storing an integration value obtained by integrating the parameter, and said determining means determines the

10 life of said image bearing member in accordance with the integration value.

12. An apparatus according to claim 11, wherein said apparatus comprises comparison means for comparing

15 the integration value and predetermined life information of said image bearing member.

13. An apparatus according to claim 10, wherein said apparatus comprises charging means for charging

20 said image bearing member, which is used for forming the electrostatic image on said image bearing member, said detection means detects applied time of a voltage applied to said charging means, and the parameter is calculated by using the voltage applied time.

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14. An apparatus according to claim 13, wherein the voltage applied time comprises n ($n \geq 1$) kinds of

voltage applied times for n kinds of respective voltage applied conditions applied to said charging means.

15.   An apparatus according to claim 13 or 14, wherein said charging means is provided being in contact with said image bearing member.

16.   An apparatus according to claim 15, wherein the parameter is calculated based on

$$D = \sum_{i=1}^{n} (ki \times ti) + (kd \times td)$$

using the voltage applied time ti (i = 1 to n) for each of the n kinds of voltage applied conditions i (i = 1 to n) , the contact time td, a coefficient ki (i = 1 to n) and kd (incidentally, k1 > 0, ki (i = 2 to n) ≥ 0, kd ≥ 0).

17.   An apparatus according to claim 12, wherein it is notified that said image bearing member has reached the expiry of life when the integration value is equal to or more than the life information.

18.   An apparatus according to claim 10, wherein, said determining means warns that the expiry of life of said image bearing member is near in accordance with the parameter before the determination of the life of

said image bearing member.

19. An apparatus according to claim 17, wherein it is warned that the expiry of life of said image bearing member is near when the integration value is equal to or more than warning information and is smaller than the life information in comparison with the warning information in which the integration value is previously determined.

20. An apparatus according to claim 10, wherein said apparatus comprises a cartridge detachably attachable to a main body of said apparatus, and said image bearing member is provided in said cartridge.

21. An apparatus according to claim 11, wherein said apparatus comprises a cartridge detachably attachable to a main body of said apparatus, and said image bearing member and said storage means are provided in said cartridge.

22. An apparatus according to claim 16, wherein said apparatus has a cartridge detachably attachable to a main body of said apparatus, and said cartridge comprises said image bearing member and storage means for storing the coefficients k_i and k_d.

23. An apparatus according to claim 16, wherein said apparatus has a cartridge detachably attachable to a main body of said apparatus, said cartridge comprises said image bearing member and storage means for storing coefficient selection information, and one set is selected from among a plurality of sets of coefficients ki and kd which are previously set in accordance with the coefficient selection information.

24. An apparatus according to claim 12, wherein said apparatus has a cartridge detachably attachable to a main body of said apparatus, and said cartridge comprises said image bearing member and storage means for storing the life information.

25. An apparatus according to claim 19, wherein said apparatus has a cartridge detachably attachable to a main body of said apparatus, and said cartridge comprises said image bearing member and storage means for -storing the warning information.

26. An apparatus according to claim 12, wherein said apparatus has a cartridge detachably attachable to a main body of said apparatus, said cartridge comprises said image bearing member and storage means for storing image bearing member life selection information, and one of a plurality of pieces of life information

previously set in accordance with the image bearing
member life selection information is selected.

27. An apparatus according to claim 19, wherein
said apparatus has a cartridge detachably attachable to
a main body of said apparatus, said cartridge comprises
said image bearing member and storage means for storing
image bearing member life selection information, and
one of a plurality of pieces of warning information
previously set in accordance with the image bearing
member life selection information is selected.

28. A cartridge detachably attachable to a main
body of an image forming apparatus, comprising:
an image bearing member; and
storage means; wherein,
the main body of said image forming apparatus is a
developer carrying member that develops an
electrostatic image formed on said image bearing member
by a developer, and comprises: detection means for
detecting contact time when said developer carrying
member, which is capable of being in contact with and
having a clearance with said image bearing member,
contacts said image bearing member; and comparison
means for comparing a parameter calculated by using the
product of the contact time detected by said detection
means by a coefficient kd, and life information of said

image bearing member, and wherein,

said storage means stores at least one of the coefficient kd and the life information.

29. A cartridge according to claim 28, wherein:
said detection means is charging means for charging said image bearing member, detects n (n ≥ 1) kinds of voltage applied times for n kinds of respective voltage applied conditions applied to said charging means used for forming the electrostatic image on said image bearing member;

the parameter is calculated based on

$$D = \sum_{i=1}^{n} (ki \times ti) + (kd \times td)$$

using the voltage applied time ti (i = 1 to n) for each of the n kinds of voltage applied conditions i (i = 1 to n), the contact time td, a coefficient ki (i = 1 to n) and the kd (incidentally, k1 > 0, ki (i = 2 to n) ≥ 0, kd ≥ 0);

_the parameter D and the life information are compared by said comparison means; and

said storage means stores the coefficient ki and the coefficient kd.

30. A cartridge according to claim 28, wherein said storage means stores warning information warning

that the expiry of life of said image bearing member is near, and said comparison means compares the parameter and the warning information.

5   31.   A cartridge according to claim 28, wherein said image bearing member is a photosensitive member, and said cartridge comprises at least one of said developer carrying member, charging means for charging said image bearing member, and cleaning means for 10   cleaning said image bearing member.

      32.   A cartridge detachably attachable to a main body of an image forming apparatus, comprising:
      an image bearing member; and
15   storage means; wherein,
      the main body of said image forming apparatus is a developer carrying member that develops an electrostatic image formed on said image bearing member by a developer, and comprises: detection means for 20   detecting contact time when said developer carrying member, which is capable of being in contact with and having a clearance with said image bearing member, contacts said image bearing member; and comparison means for comparing a parameter calculated by using the 25   product of the contact time detected by said detection means by a coefficient kd, and life information of said image bearing member, and wherein,

said storage means stores coefficient selection information, and as to the coefficient kd, one of a plurality of coefficients set in advance is selected in accordance with the coefficient selection information.

33. A cartridge according to claim 32, wherein:

said detection means is charging means for charging said image bearing member, detects n (n ≥ 1) kinds of voltage applied times for n kinds of respective voltage applied conditions applied to said charging means used for forming the electrostatic image on said image bearing member;

the parameter is calculated based on

$$D = \sum_{i=1}^{n} (ki \times ti) + (kd \times td)$$

using the voltage applied time ti (i = 1 to n) for each of the n kinds of voltage applied conditions i (i = 1 to n), the contact time td, a coefficient ki (i = 1 to n) and the coefficient kd (incidentally, k1 > 0, ki (i = 2 to n) ≥ 0, kd ≥ 0);

the parameter D and the life information are compared by said comparison means; and

as to the coefficient ki, one of a plurality of coefficients set in advance is selected in accordance with the coefficient selection information stored in said storage means.

34. A cartridge according to claim 32, wherein said storage means stores warning information warning that the expiry of life of said image bearing member is near, and said comparison means compares the parameter

5 and the warning information.

35. A cartridge according to claim 32, wherein said image bearing member is a photosensitive member, and said cartridge comprises at least one of said

10 developer carrying member, charging means for charging said image bearing member, and cleaning means for cleaning said image bearing member.

36. A cartridge detachably attachable to a main

15 body of an image forming apparatus, comprising:

an image bearing member; and

storage means; wherein,

the main body of said image forming apparatus is a developer carrying member that develops an

20 electrostatic image formed on said image bearing member by a developer, and comprises: detection means for detecting contact time when said developer carrying member, which is capable of being in contact with and having a clearance with said image bearing member,

25 contacts said image bearing member; and comparison means for comparing a parameter calculated by using the product of the contact time detected by said detection

means by a coefficient kd, and life information of said image bearing member, and wherein,

said storage means stores image bearing member life selection information, and as to the life information, one of a plurality of pieces of life information set in advance is selected in accordance with said image bearing member life selection information.

37. A cartridge according to claim 36, wherein said comparison means compares the parameter and warning information warning that the expiry of life of said image bearing member is near, and as to the warning information, one of a plurality of pieces of warning information set in advance is selected in accordance with said image bearing member life selection information.

38. A cartridge according to claim 36, wherein said image bearing member is a photosensitive member, and said cartridge comprises at least one of said developer carrying member, charging means for charging said image bearing member, and cleaning means for cleaning said image bearing member.

39. A cartridge detachably attachable to a main body of an image forming apparatus, comprising:

an image bearing member; and

storage means; wherein,

the main body of said image forming apparatus is a

developer carrying member that develops an

5   electrostatic image formed on said image bearing member

by a developer, and comprises: detection means for

detecting contact time when said developer carrying

member, which is capable of being in contact with and

having a clearance with said image bearing member,

10   contacts said image bearing member; and comparison

means for comparing a parameter calculated by using the

contact time detected by said detection means and life

information of said image bearing member, and wherein,

said storage means stores the parameter.

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40.   A cartridge according to claim 39, wherein

said image bearing member is a photosensitive member,

and said cartridge comprises at least one of said

developer carrying member, charging means for charging

20   said image bearing member, and cleaning means for

cleaning said image bearing member.